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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/753,363	01/02/2001	Zoran Obradovic	B-094	1685

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EXAMINER

HAMILTON, MONPLAISIR G

ART UNIT	PAPER NUMBER
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2172

DATE MAILED: 12/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

1/5

Office Action Summary

Application No.

09/753,363

Applicant(s)

OBRADOVIC ET AL.

Examiner

Monplaisir G Hamilton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 January 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-25 are pending.

Priority

2. Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged.

Drawings

3. The drawings are objected to because of informalities noted on PTO-948 Notice of Draftsperson's Patent Drawing review. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

4. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered Claims 8 and 9 on page 40 have been renumbered 10 and 11.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6430547 issued to Busche et al, herein referred to as Busche in view of US 6236907 issued to Hauwiller et al, herein referred to as Hauwiller.

Referring to Claims 1 and 6:

Busche discloses a system including spatial data for a spatial environment (Fig 4; col 2, lines 19-21). Busche further discloses an act of generating a data set from the spatial data using identified attributes (col 8, lines 20-25); an act of inspecting the generated data set to provide statistical information for the data set (col 4, lines 53-55); an act of preprocessing the data set to prepare the data set for modeling (col 8, lines 17; col 9, lines 21-25);

Busche does not explicitly disclose “ user selection of the attributes, an act of modeling the preprocessed data set to describe relationships between the attributes and the one or more target values (col 4, lines 36-40); and an act of providing recommendations such that the recipe is optimized (col 4, lines 58-62).”

Hauwiller discloses using an expert system (data mining system) to generate application maps based on field data and the relationship to the desired output (col 4, lines 36-40). The

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system further generates treatment reports in addition to the applications maps (col 4, lines 48-52). Hauwiller further states that user instructions are used to determine what information is retrieved when generating the reports and maps (col 4, lines 23-26).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to employ the data mining techniques disclosed by Busche in Hauwiller's system. One of ordinary skill in the art would have been motivated to do this because it would allow the user to determine optimum fertilization levels (col 1, lines 35-40).

Referring to Claim 7:

Busche discloses a system including one or more spatial databases corresponding to one or more spatial environments, a system for knowledge discovery from the one or more spatial databases, the system (Fig 4; col 2, lines 19-21; col 6, lines 10-15) comprising: spatial data modeling and analysis module (SDAM module) for extracting knowledge from the one or more spatial databases (Fig 4; col 13, lines 25-30, 35-40), the SDAM module comprising: a data generation and manipulation module for loading the data set from the one or more spatial databases based on designated attributes (col 8, lines 20-25), a data inspection module for providing spatial statistics on the loaded data set (col 4, lines 53-55); a data preprocessing module for preparing the data set for modeling, wherein the data preprocessing module removes errors from the data set (col 8, lines 1-5); a data partitioning module for dividing the data set into a homogenous data segments which improve data modeling (col 8, lines 58-63).

Busche does not explicitly disclose "a user interface, wherein attributes are supplied to the data generation and manipulation module by a user through the user interface; and a

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modeling module for describing relationships between the attributes and one or more target values, wherein the relationships are obtained from the partitioned data set.”

Hauwiller discloses using an expert system (data mining system) to generate application maps based on field data and the relationship to the desired output (col 4, lines 36-40). The system further generates treatment reports in addition to the applications maps (col 4, lines 48-52). Hauwiller further states that user instructions are used to determine what information is retrieved when generating the reports and maps (col 4, lines 23-26) and the instructions are entered using a user interface (col 1, lines 65-67).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to employ the data mining techniques disclosed by Busche in Hauwiller’s system. One of ordinary skill in the art would have been motivated to do this because it would allow the user to determine optimum fertilization levels (col 1, lines 35-40).

Referring to Claim 16 and 22:

Busche discloses a system a networked computer system that includes a client and a server (col 3, lines 24-26), wherein the server maintains spatial data sets (Fig 4, col 2, lines 19-21; col 6, lines 10-15), a method for analyzing the spatial data sets over the network (col 10, lines 15-18), the method comprising the steps for: classifying the spatial data sets into predetermined classes (col 8, lines 58-62).

Busche does not explicitly disclose “applying spatial data mining functions to the spatial data sets, wherein said spatial data mining functions comprise the steps for modeling the spatial data sets to provide estimation of predetermined parameters at predetermined points; and using

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the estimation of the predetermined parameter to accomplish a predetermined purpose, wherein the predetermined purpose includes at least one of determining how the predicted variable affects a predetermined target variable, providing recommendations as to how to achieve a predetermined target variable, and creating new spatial data mining methods.”

Hauwiller discloses using an expert system (data mining system) to generate application maps based on field data and the relationship to the desired output (col 4, lines 36-40). The system further generates treatment reports in addition to the applications maps (col 4, lines 48-52). Hauwiller further states that user instructions are used to determine what information is retrieved when generating the reports and maps (col 4, lines 23-26) and the instructions are entered using a user interface (col 1, lines 65-67; col 4, lines 5-35).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to employ the data mining techniques disclosed by Busche in Hauwiller’s system. One of ordinary skill in the art would have been motivated to do this because it would allow the user to determine optimum fertilization levels (col 1, lines 35-40).

Referring to Claim 23:

Busche discloses an environment including spatial data relating to a specific agricultural field (col 9, lines 60-65), a method for analyzing the spatial data comprising steps for: classifying the spatial data sets into predetermined classes (col 8, lines 58-62).

Busche does not explicitly disclose “applying spatial data mining functions to the spatial data, wherein said spatial data mining functions comprise the steps for modeling the spatial data to provide estimation of predetermined parameters at predetermined points; using the results of

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the spatial data analysis to optimize the treatment of the agricultural field to produce a predetermined yield.

Hauwiller discloses using an expert system (data mining system) to generate application maps based on field data and the relationship to the desired output (col 4, lines 36-40). The system further generates treatment reports in addition to the applications maps (col 4, lines 48-52). Hauwiller further states that user instructions are used to determine what information is retrieved when generating the reports and maps (col 4, lines 23-26) and the instructions are entered using a user interface (col 1, lines 65-67; col 4, lines 5-35). Optimization of the yield is also performed by Hauwiller's system (col 1, lines 22-25; 35-38).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to employ the data mining techniques disclosed by Busche in Hauwiller's system. One of ordinary skill in the art would have been motivated to do this because it would allow the user to determine optimum fertilization levels (col 1, lines 35-40).

Referring to Claim 2:

Busche discloses the limitations as discussed in Claim 1 above. Busche further discloses the act of preprocessing the data set further comprises: an act of cleaning the generated data set (col 8, lines 1-5); an act of interpolating the generated data set; an act of normalizing the generated data set; and an act of generating new attributes (col 8, lines 1-6).

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Referring to Claim 3:

Hauwiller discloses the limitations as discussed in Claim 1 above. Hauwiller further discloses the recipe is a fertilizer recipe for use in an agricultural field (col 1, lines 23-25, 35-38).

Referring to Claim 4:

Hauwiller discloses the limitations as discussed in Claim 1 above. Hauwiller further discloses a crop yield is included in the one or more target values (col 18, lines 47-49).

Referring to Claim 5:

Busche discloses the limitations as discussed in Claim 1 above. Busche further discloses the relationships include one or more clusters, wherein a first cluster from first spatial data corresponding to as first spatial environment is used to optimize a recipe for a second spatial environment (col 8, lines 58-63).

Referring to Claims 8 and 10:

Busche discloses the limitations as discussed in Claim 7 above. Busche further discloses the SDAM module further comprises an integration module for enhancing the knowledge generated from the one or more spatial databases (col 8, lines (col 8, lines 1-5).

Referring to Claims 9 and 11:

Busche discloses the limitations as discussed in Claim 7 above. Busche further discloses the preprocessing module further comprises: a cleaning and filtering module for removing duplicate

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data and removing noise from the loaded data set; a data interpolation module for computing common values for a common set of locations (col 8, lines 1-6); a data inspection module for providing spatial statistics on the loaded data set (col 4, lines 53-55); a data preprocessing module for preparing the data set for modeling, wherein the data preprocessing module removes errors from the data set (col 8, lines 1-6); a data partitioning module for dividing the data set into a homogenous data segments which improve data modeling (col 8, lines 58-62); and a modeling module for describing relationships between the attributes and one or more target values, wherein the relationships are obtained from the partitioned data set (col 10, lines 21-25).

Referring to Claim 12:

Hauwiller discloses the limitations as discussed in Claim 7 above. Hauwiller further discloses a recommendation module, wherein the recommendation module optimizes a recipe for a spatial environment (col 1, lines 22-25, 35-38).

Referring to Claim 13:

Hauwiller discloses the limitations as discussed in Claim 10 above. Hauwiller further discloses the recommendation module includes at least one of: a fertilization module for optimizing a fertilizer recipe to be applied to an agricultural field; an irrigation module for optimizing a water recipe to be applied to a field; and an equipment module for optimizing a recipe to be applied to equipment (col 1, lines 22-25, 35-38).

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Referring to Claim 14:

Hauwiller discloses the limitations as discussed in Claim 11 above. Hauwiller further discloses the recommendation module z includes at least one of: a pesticide module, a herbicide module, and a seed-spacing module (col 1, lines 22-25, 35-38).

Referring to Claim 15:

Hauwiller discloses the limitations as discussed in Claim 7 above. Hauwiller further discloses the data generation and manipulation module, the data inspection, the data preprocessing module, the data partitioning module, and the modeling module can be independently controlled by the user through the user interface (col 4, lines 5-35).

Referring to Claim 17:

Busche discloses the limitations as discussed in Claim 16 above. Busche further discloses the step for combining different programming environments to allow different programming environments to function on one server (Fig 8; col 5, lines 5-10).

Referring to Claim 18:

Busche discloses the limitations as discussed in Claim 17 above. Busche further discloses the step for combining different programming environments comprises a unified controller (col 5, lines 5-10).

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Referring to Claim 19:

Busche discloses the limitations as discussed in Claim 16 above. Busche further discloses the spatial data set is generated by a spatial data simulator (col 8, lines 35-45).

Referring to Claim 20:

Busche discloses the limitations as discussed in Claim 16 above. Busche further discloses said spatial data mining functions further comprise the step for partitioning said data set into more homogenous portions (col 8, lines 58-62).

Referring to Claim 21:

Busche discloses the limitations as discussed in Claim 16 above. Busche further discloses said spatial data mining functions further comprise the step for integrating said modeling and classifications steps (Fig 4; col 8, lines 1-5; col 10, lines 20-25).

Referring to Claim 24:

Hauwiller discloses the limitations as discussed in Claim 23 above. Hauwiller further discloses said spatial data consists of past and present data of a specific agricultural field (col 6, lines 62-65).

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Referring to Claim 25:

Busche discloses the limitations as discussed in Claim 23 above. Busche further discloses the step for applying spatial data mining functions occurs in a network environment (col 3, lines 20-26).

Prior Art

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 6058351 issued to McCauley, James D. McCauley discloses a method and apparatus for determining management zones in a field for precision farming. The method and apparatus use a self-organizing network, such as a Kohonen neural network, to perform the classification of site-specific farming data into management zones in a farm field. The self-organizing network is configured to learn the proper classifications through a learning or training process.

US 5467271 issued to Abel, Robert J. et al. Abel discloses a mapping and analysis system generates agricultural maps and analyzes the agricultural maps to match farm inputs of a farming field to current soil and vegetation characteristics to optimize the productivity of the farming field. The mapping and analysis system includes an air-based device for generating spectral image data related to at least one of vegetation stress and soil characteristics for a portion of the farming field. A database is generated using the georeferenced data to monitor and analyze the farming field for a growing season to improve productivity thereof.

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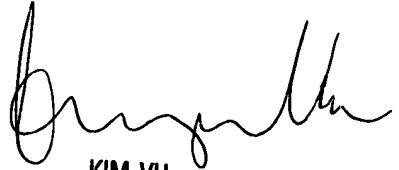
Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monplaisir G Hamilton whose telephone number is 1703-305-5116. The examiner can normally be reached on Monday - Friday (8:00 am - 4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Y Vu can be reached on 1703-305-4393. The fax phone numbers for the organization where this application or proceeding is assigned are 1703-746-7239 for regular communications and 1703-746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 1703-305-3900.

Monplaisir Hamilton
December 9, 2002


KIM VU
SUPERVISORY PATENT EXAMINER
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